

# Germanium PNP Transistor

## **2N1099**

(DT80)

40/80V / 15A

# DATASHEET

OEM – Delco

Source: Delco Power Transistors 1958

**DELCO RADIO DIVISION**

GENERAL MOTORS CORPORATION  
KOKOMO, INDIANA

**2N1099**

FORMERLY DT80

**POWER TRANSISTOR**

November 4, 1958

**ENGINEERING DATA SHEET**

SUPERSEDES ALL PREVIOUS DATA SHEETS

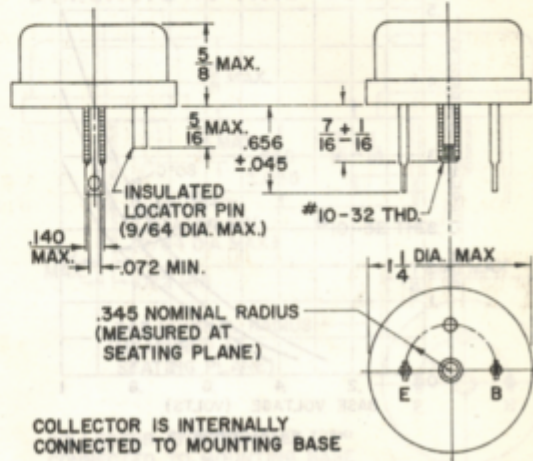
**GENERAL DESCRIPTION**

The improved Delco Radio Type 2N1099 is a P-N-P germanium power transistor designed for general use with a 28 volt power supply and in applications where high voltage transients are encountered. It is characterized by a new, higher maximum emitter current of 15 amperes, a maximum collector diode voltage of 80 volts, a high current gain at 15 amperes and a thermal resistance below .8°C/Watt. The maximum power dissipation at a mounting base temperature of 71°C is 30 watts. A low saturation resistance will give high efficiency in switching applications.

The case is hermetically sealed. The collector is electrically connected to the case.

The Delco 2N1099 transistors will be supplied either in single units or in matched pairs.

**DIMENSIONS AND CONNECTIONS**



**ABSOLUTE MAXIMUM RATINGS**

Collector diode voltage $V_{CB}$ ( $V_{EB} = -1.5$ volts )	80 volts	Maximum junction temperature	
Emitter diode voltage $V_{EB}$	40 volts	Continuous	95°C
Emitter current (continuous)	15 amp.	Intermittent	100°C
Base current (continuous)	4 amp.	Minimum junction temperature	-65°C

**ELECTRICAL CHARACTERISTICS (  $T = 25^\circ C$  )**

	Min.	Typical	Max.	
Collector diode current $I_{CO}$ ( $V_{CB} = -2$ volts )		100		microamp
Collector diode current $I_{CO}$ ( $V_{CB} = -80$ volts )		2	8	ma
Emitter diode current $I_{EO}$ ( $V_{EB} = -40$ volts )		1	8	ma
Current gain ( $V_{EC} = -2$ volts, $I_C = 5$ amps )	35		70	
Current gain ( $V_{EC} = -2$ volts, $I_C = 12$ amps )		25		
Base voltage $V_{EB}$ ( $V_{EC} = -2$ volts, $I_C = 5$ amps )		.65	.9	volt
Floating potential $V_{EB}$ ( $V_{CB} = -80$ volts, $I_E = 0$ )		.15	1	volt
Saturation voltage $V_{EC}$ ( $I_B = 2A$ , $I_C = 12$ amps )		.3	0.7	volt
Collector to emitter voltage $V_{CES}$ ( $I_C = 300$ ma d.c., $V_{EB} = 0$ )	70			volts
Collector to emitter voltage $V_{CEO}$ ( $I_C = 300$ ma d.c., $I_B = 0$ )		60		volts
Common emitter current amplification cutoff frequency ( $I_C = 5$ amp, $V_{EC} = -6$ volts )		10		kcs
Rise time ("on" $I_C = 12$ Adc, $I_B = 2$ amps, $V_{CE} = -12$ volts)		15		microsec
Fall time ("off" $I_C = 0$ , $V_{EB} = -6$ volts, $R_{EB} = 10\Omega$ )		15		microsec

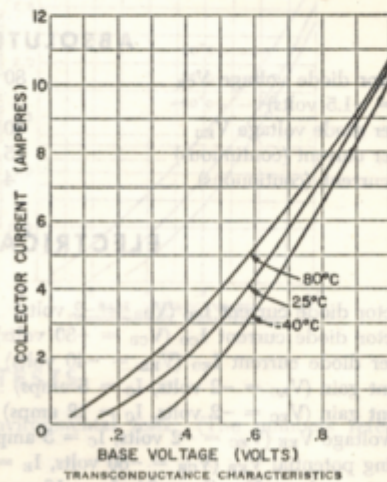
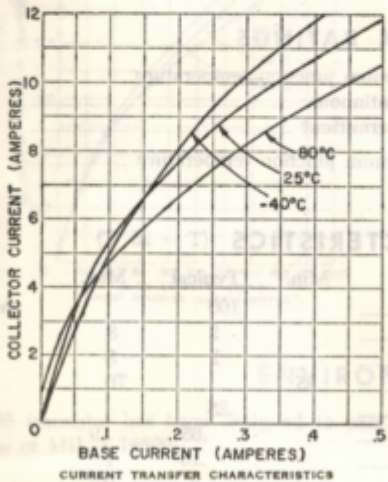
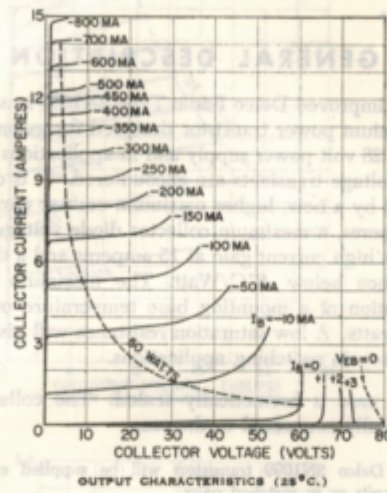
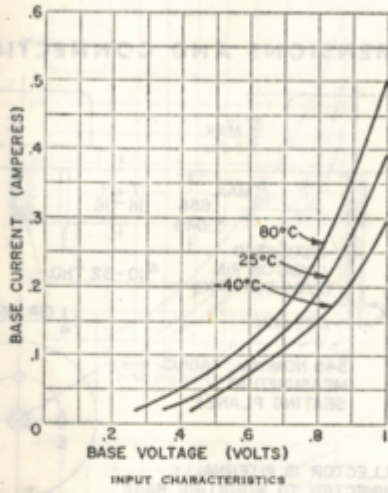
**THERMAL CHARACTERISTICS**

Thermal resistance (junction to mounting base)	.5	8	°C/watt
Thermal capacity for pulses in the 1 to 10 millisecond range	.075		watt sec/°C

# 2N1099

DELCO RADIO DIVISION  
GENERAL MOTORS CORPORATION

## TYPICAL CHARACTERISTICS, COMMON EMITTER



## MECHANICAL DATA

The 2N1099 transistor has been designed to pass the following environmental tests: (The numbers refer to paragraphs of MIL-T-19500) Temperature Cycling (4.6.24), Glass Strain (4.6.25), Moisture Resistance (4.6.26), Shock (4.6.28), Vibration Fatigue (4.6.30), Vibration Noise (4.6.31), and Reduced Pressure (15 mm of mercury) (4.6.32). Maximum recommended torque on the mounting stud is twelve inch-pounds.